

ABSTRACT

An opening is made in a surface intercepting a wave propagating through space. An image of an object is formed on an intermediate surface from the wave passing through this opening. After wave conversion, that is to say, after the entity of a wave is converted into a detectable wave from which a two-dimensional image can be picked up, an image is picked up with a two-dimensional image pick-up device. Distortion caused by the two-dimensional image pick-up device is corrected using a calibration grid pattern provided on the intermediate surface. The intermediate surface provides a wave converting function, distortion calibrating function, distortion-free wide field of view ensuring function, and wave entity converting function, and a place of detection elements themselves.